

Curriculum Vitae:

Dr. Ing. Juan Jesús Velasco Vélez

Education

- Since 2011** Postdoctoral position at the Lawrence Berkeley National Laboratory (in the frame of the Alexander von Humboldt Fellowship).
- 2010** Visitor at the Universidad de Chile.
- 2010** Dr. Ing. (Ruhr Universität Bochum, Germany)
Thesis: "Modelling of electrical controlled nanofilm gas sensors"
(Magna Cum Lauden).
- 2006** Master thesis (Technische Universität Darmstadt, Germany)
"Extended Algorithms for Buffer Insertion in Capacitively and Inductively Coupled Interconnects and Analysis of Power Consumption" (Excellent)
- 2005** Diplom engineering in Electronic (Universidad de Granada, Spain)
- 2002** Bachelor in Physics (Universidad de Granada, Spain)

Formal Certificates

- Dr. Engineering in electronic (Ruhr Universität Bochum, Germany)
- Dipl. Engineering in electronic (Universidad de Granada, Spain)
- Bachelor in Physics (Universidad de Granada, Spain)

Grants

- 2011** Alexander von Humboldt Grant (Germany).
- 2005** Erasmus scholarship (EU).
- 2005** Universidad de Granada scholarship (Spain).

Employment

- 2011-2013** Postdoctoral position at the Lawrence Berkeley National Laboratory (USA), Department of material sciences.
- 2010-2011** Electronic engineering in Adlantis GmbH Dortmund (Germany).
- 2007-2010** Scientific assistant in the Universität Mainz (Germany), Department of applied surface physics and nano technology.
- 2005-2006** Student assistant in the Technische Universität Darmstadt (Germany), department of microelectronic system (MES).

Industrial and Investigation Projects

- 2009-2010** ALECHILE: Electroadsorptive effect analysis by means of XPS Measurements. Partnets: Fritz Haber Institut, Universidad de Chile, Fraunhofer IPM and Johannes Gutenberg Universität.
- 2010** GasFET: Gassensor development and optimization. Partnet: SIEMENS GmbH.
- 2009-2010** SONDE: Virus detection by means of funtional magnetic nanoparticles. Partnets: Medizinische Hochschule Hannover
- 2009-2010** Smart-Cap: Smart-cap with time indicator based on polymers. Partner: KISICO GmbH, Adlantis GmbH.
- 2007-2009** CarGAS: Nano-Sensitive field effect gas sensor. Partnets: Micronas GmbH, Fraunhofer IPM, ELBAU Berlin, Johannes Gutenberg Universität.

Publication list and conference contributions

1. A. Chaiyboun, O. Ottlinger, J.J. Velasco-Vélez, C. Horst, T. Doll, “*Nanometerdicke Metalloxidschichten für die Gassensorik*”, Workshop Detektion von Explosivstoffen, Pfinztal (Germany), 2007. Lecture
2. T. Doll, A. Chaiyboun, J.J. Velasco-Vélez, C. Horst, M.L. Bauersfeld, C. Wilbertz, J. Wöllenstein, “*Time Resolved Simulation of Tin Oxide-based Gas Sensors Parameters Using a Coupled Drift-Diffusion Model*” 14. GMA / ITG-Fachtagung der VDI / VDE-

Gesellschaft: Sensoren und Messsysteme, pp. 531-538, Ludwigsburg (Germany), 2008.
Invited lecture

3. J.J. Velasco-Vélez, A. Chaiyboun, C. Horst, T. Doll, M.L. Bauersfeld, C. Wilbertz, J. Wöllenstei, "Design and Measuring Methodology of Electric-field Controlled Gas Sensors", proceedings 14. GMA / ITG-Fachtagung der VDI / VDE-Gesellschaft: Sensoren und Messsysteme, pp. 949-956, Ludwigsburg (Germany), 2008. Poster
4. **J.J. Velasco-Vélez, A. Chaiyboun, C. Wilbertz, S. Scheinert, T. Doll, "Drift Modelling of Electrically Controlled Nanoscale Metal Oxide Gas Sensors", IEEE Electron Device Letters, Vol. 29, Issue 7, pp. 677-680, July 2008.**
5. J. J. Velasco-Velez, A. Chaiyboun, C. Wilbertz, J. Wöllenstei, M. Bauersfeld, T. Doll, "Thin Film Transistor Modeling of a Nanoscale Gas-Sensor", proceedings Engineering of Functional Interfaces (EnFI), Jülich (Germany), 2008. Lecture
6. **J. J. Velasco-Velez, A. Chaiyboun, C. Wilbertz, J. Wöllenstei, M. Bauersfeld, T. Doll, "CMOS-Compatible Field Effect Nanoscale Gas-Sensor: Operation and Annealing Models", IEEE Sensors 2008, pp. 26-29, 2008.**
7. J. J. Velasco-Velez, A. Chaiyboun, C. Wilbertz, J. Wöllenstei, M. Bauersfeld, T. Doll, "Characterization of a Nanoscale Gas-Sensor Based on Field Effect", proceedings Eurosensors XXII, pp. 365-369, Dresden (Germany), 2008. Poster
8. **J. J. Velasco-Velez, A. Chaiyboun, C. Wilbertz, J. Wöllenstei, M. Bauersfeld, T. Doll, "CMOS-Compatible Nanoscale Gas-Sensor Based on Field-Effect", Physica Status Solidi (a), Vol. 206, No. 3, pp. 474-483, 2009.**
9. J. J. Velasco-Velez, A. Chaiyboun, C. Wilbertz, J. Wöllenstei, M. Bauersfeld, T. Doll, "Field Effect SnO₂ Nano-Thin Film Layer CMOS-Compatible", proceedings Sensor+Test XIV, Nürnberg (Germany), Vol. II, pp. 123-128, 2009. Lecture
10. Jürgen Wöllenstei, Marie-Luise Bauersfeld, Heinz-Peter Frerichs, Christoph Wilbertz, Theodor Doll, Juan Velasco Velez, Holger Adamzig, "Gassensitiver Metaloxid-Dünnschicht-Transistor", proceedings 3. Gassensor-Workshop (GSWS2009), Freiburg (Germany), 2009. Lecture

11. J.J. Velasco-Velez, C. Wilbertz, T. Haas, T. Doll, “Quantum Mechanical Co-Adsorption Modelling of Real Electrically Controlled Semiconductor Gas Sensors”, *Procedia Chemistry*, Vol. 1, Issue 1, pp. 642-645, 2009.
12. Theodor Doll, Juan J. Velasco Vélez, Cordula Zimmer, Sebastian Mäder, Sandra Kurzweg, Thomas Haas, “Nano-Functionalized Chemical Sensors and Analyzers”, proceedings 1er Congreso Nacional de Nanotecnología, Valparaiso (Chile), 2009. Lecture
13. J. Velasco-Velez, T. Haas, T. Doll, “Co-Adsorption Modelling on Electrically Controlled SnO₂ Nanofilms Gas Sensors”, proceedings Engineering of Functional Interfaces (EnFI), Hasselt (Belgium), 2009. Lecture
14. Jan Kirchner, Bettina Kirchner, Sandra Kurzweg, Juan Velasco-Velez, Thomas Haas, Theodor Doll, “SmartCap – Ein Projekt zur Entwicklung eines Schraubverschlusses mit integrierter Zeitmessung”, proceedings TECHNOMER 2009, Chemnitz (Germany), 2009. Lecture
15. Juan Jesús Velasco Vélez, Theodor Doll, Thomas Haas, Sandra Kurzweg, and Ulrich Kunze, “External Electric Field Influence on the Adsorption-Desorption of Gases in Semiconductors”, Workshop 3rd GOSPEL, Tübingen (Germany), 2009. Lecture
16. Juan Jesús Velasco Vélez, Theodor Doll, Thomas Haas, and Ulrich Kunze, “Electrically Controlled Metal Oxide Gas Nanosensor”, proceedings IBERNAM09, Sevilla (Spain), 2009. Lecture
17. **Juan-Jesus Velasco-Velez, Ulrich Kunze, Thomas Haas, T. Doll, “Co-adsorption processes, kinetics and quantum mechanical modelling of nanofilm semiconductor gas sensors”, Physica Status Solidi (a), Vol. 207, No. 4, pp. 924-929, 2010.**
18. J.J. Velasco-Vélez, T. Haas, G. Urban, U. Kunze, T. Doll, “Virus sorting by functional nano particles using an alternating quadrupole for biological applications in lab on chip”, proceedings Engineering of Functional Interfaces (EnFI), Marburg (Germany), 2010. Lecture
19. J.J. Velasco-Vélez, D. Rosenthal, T. Doll, “Electroadsorptive effect, experimental proof and reaction pathways”, proceedings Engineering of Functional Interfaces (EnFI), Marburg (Germany), 2010. Lecture

- 20. Juan Jesús Velasco Vélez, *Modelling of electrically controlled nanofilm gas sensors*, Shaker Verlag, Aachen (Germany), 2010.**
21. T. Doll, S. Stegmeier, J. Velasco-Velez, A. Kontchev, T. Haas, R. Pohle and M. Fleischer, "Work function redeout of soft matter in chemosensors", proceedings of SOCHIFI XVII, pp. 23, Pucón (Chile), 2010. Lecture
22. J.J. Velasco-Vélez, D. Rosenthal, V. Fuenzalida, J. Avila and T. Doll, "External field application and surface reaction in nano thin films", proceedings Engineering of Functional Interfaces (EnFI), Linz (Austria), 2011. Lecture
- 23. Peter Marek, Juan-Jesús Velasco-Velez, Thomas Haas, Theodor Doll, Gabriela Sadowski, "Miniaturized Based on Oxygen Diffusion Timing Sensor for Polymer Packaging ", Procedia Engineering Vol 25, pp. 1217-1220, 2011.**
24. Alex Kortschev, Juan Velasco-Velez, Thomas Haas, Gerald Urban, Uta Reich, T. Doll, "Guiding Bead-Target Complexes in Microfluidic Systems by Quadrupole Fields", proceeding Eurosensors XXV, Athens (Greece), 2011. Lecture
- 25. J.J. Velasco-Vélez, "Co-Adsorption Processes and Quantum Mechanical Modelling of Gas Sensing Effects" in Chemical Sensors: Simulation and Modelling. In press Momentum Press , 2012.**